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JOINT MILITARY ENGINEERS – SHAPING THE COMBATANT COMMANDER’S AREA OF RESPONSIBILITY

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Abstract There are advantages of using Military Engineers rather than alternate institutions to shape the Combatant Commanders Area of Responsibility. This study will examine the differences between the U.S. Military Engineers, the State Department, and non-governmental organizations in their ability to conduct infrastructure development during peacetime. The study will also explore the origins of the nation-building program to uncover why these programs were developed and what their initial objectives were. The study will then trace the evolution of the National Command Authorities engagement strategy to highlight how subtle changes over time have altered the original definition of engagement and whether or not these changes have caused a deviation from the original concept. The background discussion will set the stage for a contrast and comparison of the capabilities for infrastructure development within each service, the Department of State, and several non-governmental organizations. Due to the complexity and the scope of engagement, this study will focus on infrastructure development issues only. The study will conclude with an assessment addressing whether or not Joint Military Engineers are more capable for this type of mission than other agencies. In addition the study will offer recommendations for improvements necessary for maintaining program relevance, and some that are beneficial.		

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PREFACE

For my three years as an engineer officer for the U.S. Southern Command my days were predominantly consumed supporting the National Command Authorities' concept of engagement or more importantly the President's vision of promoting democracy throughout the world. While this vision is a worthy goal, it requires the typical soldier, sailor, airman, or Marine to frequently execute operations that are atypical of traditional military missions. Despite the lack of tradition, the current National Security Strategy of peacetime engagement does provide valuable beneficial training opportunity in the event of a major theater war. The main challenges of this engagement strategy are the availability of resources (personnel, equipment, funds, etc.) and effectively applying those resources to exercises or operations. As one CINC claimed, "Military Engineers are the best engagement tool I have. I could use three times as many if I could get them." I saw first hand the capabilities and limitations of Joint Military Engineers on many occasions as a member of the U.S. Southern Command. As the world shifts from a bipolar world to a uni-polar or possibly back to a multi-polar world, it is imperative for the U.S. to develop long-term strategy that will be in the best interests of our nation and its people. If that long-term strategy of engagement remains, the CINC must understand the assets he has. Are Joint Military Engineers the best tool for regional CINC's to use in their engagement mission?

I would like to take a few words to thank my former colleagues in the Command Engineer, U.S. Southern Command, for the three great years of experience working the Engineer portion of the Theater Engagement Strategy. Were it not for the experiences,

good and bad, I would not have the foundation for my research interests. I learned a great deal concerning Joint Engineer Operations during Military Operations Other Than War such as Disaster Relief, Humanitarian Assistance, Counter Narcotics and much more. Because of these experiences, I'm compelled to pass on this information.

Chapter 1.

INTRODUCTION

There are advantages of using Military Engineers rather than alternate institutions to shape the Combatant Commander's Area of Responsibility. This study will examine the differences between the U.S. Military Engineers, the State Department, and non-governmental organizations in their ability to conduct infrastructure development during peacetime. The study will also explore the origins of the nation-building program to uncover why these programs were developed and what their initial objectives were. The study will then trace the evolution of the National Command Authorities' engagement strategy to highlight how subtle changes over time have altered the original definition of engagement and whether or not these changes have caused a deviation from the original concept. The background discussion will set the stage for a contrast and comparison of the capabilities for infrastructure development within each service, the Department of State, and several non-governmental organizations. Due to the complexity and the scope of engagement, this study will focus on infrastructure development issues only. The study will conclude with an assessment addressing whether or not Joint Military Engineers are more capable for this type of mission than other agencies. In addition the study will offer recommendations for improvements necessary for maintaining program relevance, and some that are beneficial.

Chapter 2.

ISOLATE OR ENGAGE

The Evolution of National Involvement

Nearly fifty-five years ago, in his final inaugural address, President Franklin Delano Roosevelt reflected on the first half of the twentieth century. “We have learned that we cannot live alone at peace. We have learned that our own well being is dependent on the well being of other nations far way. We have learned to be citizens of the world, members of the human community”.¹ Roosevelt essentially signaled a shift away from the traditional American policy of isolationism toward a policy of increasing engagement in foreign affairs and diplomacy. The experience of the United States in the second half of the century has demonstrated the value of engagement as a means to promote regional stability and improve national security by means of long-term reduction in threat potential.

The policy shift toward engagement required a redefinition of the purpose and scope of the military, which was largely accomplished through the various strategic and doctrinal changes that occurred during the 1980s and 1990s. This policy shift raised a political issue regarding the appropriate use of the military, which is rooted in the prevailing concern over human rights and seeming paradox of the use of military force as

a means to secure peace.² Currently, the various strategic and doctrinal statements of the United States suggest that the military will be increasingly used in Military Operations Other Than War (MOOTW). This parallels international views that peacekeeping and crisis and disaster response are an integral part of the military mission.

From a national security strategy perspective, the shift toward engagement provides a degree of legitimacy for the presence of American forces in forward deployed areas. This legitimacy is best defined as subjective judgment of indigenous populations that authority is being correctly exercised for constructive purposes. In general, legitimacy is established by the acceptance of the government or agency exercising civil authority in the Area of Responsibility (AOR) and the execution of law-and-order operations, which include infrastructure enhancement projects that benefit the civilian population. Establishing the perception of legitimacy augments the ability of the United States to respond rapidly to emerging global threats through forward-deployed forces while simultaneously functioning to reduce the potential development of such threats.

Historically, military engineers have played a prominent role in MOOTW in missions that have included disaster relief and infrastructure enhancement. The U.S. Army Corps of Engineers (USACE) was engaged in the process of nation building in Europe after World War II. A prime example is Greece during 1940s and 1950s. USACE was instrumental in enhancing the prosperity of Greece through enhancements to the transportation and communications infrastructure. These improvements helped limit the influence and effectiveness of a communist-backed insurgency that threatened to topple the democratically elected government. Since that time, USACE has undertaken

¹ A National Security Strategy for a New Century. *The White House. Dec 1999.*

major engineering studies and projects in many countries. These projects have included studying, designing, and constructing roads in Afghanistan, Iran and other Middle-Eastern countries, as well as engaging in port and highway projects in Burma (Myanmar), British Guiana (Guyana), Korea, Pakistan, and Saudi Arabia. Under the terms of the Foreign Aid Assistance Act of 1961, USACE began working in reimbursable programs under U.S. Agency for International Development (USAID). Most of these projects focused on transportation networks such as road or airport construction in Middle Eastern or North African nations.

USACE's foreign operations outside the sphere of U.S. military operations has been limited to constructing military infrastructure for allied and friendly governments, such as the construction of two Israeli air bases in Negev desert. Nonetheless, the rapid deployment capabilities of Rapid Engineer Deployable Heavy Operational Repair Squadron, Engineer (RED HORSE) and Base Engineer Emergency Force (Prime BEEF) units afford these Air Force engineer units the ability to respond swiftly to emerging crisis situations that had not been anticipated by diplomatic or military intelligence. In addition, general civilian infrastructure enhancement operations can provide the opportunity for RED HORSE and Prime BEEF units to augment training and test their operational readiness.

As the Cold War ended, the engineering units of all the branches of the military became more involved in a wider range of military contingencies and humanitarian assistance operations. This role expansion was due to a growing understanding of the necessity of engagement to shape environments and for the development of more formal

² Whitman, Jim. 'Those That Have the Power to Hurt but Would Do None': The Military and Humanitarianism. *Cambridge University*, 23 Jan 1997.

doctrines and policies to guide the nature and scope of engagement in a military context. The decade of the 1990s has seen the growth in the use of military forces for humanitarian purposes, which includes both the concept of a “humanitarian warfare” to restore human rights as well as MOOTW. This has led to the development of an international agenda for militarized peace and a humanitarian policy generally agreed upon by both the United States and the United Nations.³

In accordance with the National Security Strategy, military engineering units have been used for foreign crisis and disaster relief operations, and have at times been engaged in multi-national and inter-governmental operations. To some degree, the use of military engineers in this context is an extension into a foreign arena of the historical domestic use of such units to mitigate the effects of natural disasters and provide infrastructure enhancements.⁴ In addition, the use of military engineers in crisis situations such as Haiti and Kosovo underscores their expanding role pursuant to the evolving National Security Strategy.

The military’s experience in Haiti demonstrated the need for such objectives to be clearly contained in the operational mission statements. If infrastructure improvement objectives are not included in the mission statement, they are seen as mission creep, are not included in resource allocation, and are not considered in the operational timeline. In Haiti between 1994 and 1996, American military units were deployed as part of the UN-authorized and U.S.-led Multi-national Force (MNF) their mission was to insure the departure of the military regime, restore elected authorities and establish a secure nation-

³ Slim, Hugo. Military Humanitarianism and The New Peacekeeping: An Agenda For Peace? *The Journal of Humanitarian Assistance*, 22 Sep 1995. Retrieved online January 4, 2001: <http://www.jha.ac/articles/a003.htm>.

building environment. The Haitian population at large expected and encouraged the military units to engage in infrastructure enhancement projects, which had occurred previously during the 1915-1934 American occupation of Haiti. MNF directives against nation-building and mission creep, as well as a preordained exit date, hampered the efforts of military construction for civilian purposes. Nonetheless, American military engineers undertook a number of projects, one of which was a bridge at Jacmel funded by donor governments.⁵ Troops scattered across Haiti also participated in small infrastructure repair and enhancement projects such as rehabilitation of schools and churches and road repair. Often such projects were completed during the unit's off-duty hours with volunteers.

Effective international action requires coordinated strategic planning to address relevant military and non-military engagement issues from a clear and consistent standpoint. Although the American military engineers completed many construction projects in Haiti, the opportunity for more robust infrastructure enhancement was lost due to a lack of defined engineering engagement mission objectives. For example, there are some indications that the Intergovernmental Agencies (IGOs) involved in mission planning were reluctant to expend internationally controlled resources in Haiti for political reasons.⁶ This difficulty can be remedied by increased reliance on domestic or private funding sources in future nation-building operations through partnering with Non-governmental Organizations/Private Voluntary Organizations (NGOs/PVOs) with an

⁴ Potter, Andrew K. U.S. Army Prime Power: A Tradition of Innovation and Excellence. *Periodical; Engineer: The Professional Bulletin for Army Engineers*, PB 5-00-3, Ft. Leonard Wood, MO, Jul 2000.

⁵ Maguire, Robert. Edwige Balutansky, Jacques Fomerand, Larry Minear, William G. O'Neill, Thomas G. Weiss and Sarah Zaidi. Haiti Held Hostage: International Responses To The Quest For Nationhood 1986-1996. *The Thomas Watson Jr. Institute For International Studies*, 1996.

⁶ Haiti Held Hostage: International Responses To The Quest For Nationhood 1986-1996.

interest in construction projects within the Commander in Chief's (CINC) Area of Responsibility (AOR).

This potential solution has a historical precedent. The disaster relief efforts in the Caribbean for Hurricane Mitch and Hurricane Georges in 1998 provide an example of the effective use of military engineers. The devastation caused by these storms was extensive and damaged the infrastructure and economies of several nations. USAID and its NGO/PVO partners, such as Catholic Relief Society and the Foundation for International Community Assistance, supervised, planned, and funded the immediate relief and long-term reconstruction efforts. USAID's Office of Foreign Disaster Assistance (OFDA) provided initial reconnaissance, damage assessments, and project prioritization. Because of the magnitude of the damage and the proposed relief effort, approximately 5,000 U.S. military personnel took part in rescue operations, transportation infrastructure repairs, and the repair and replacement of schools and hospitals damaged by the storm.⁷ The food lift undertaken by military personnel became the largest in American history, delivering 84 million pounds of commodities. Once immediate relief was achieved relief efforts shifted to long term infrastructure enhancements. These included restoring health care delivery systems, restoring community water and sanitation, reconstructing transportation infrastructure, and the rehabilitating and repairing of damaged buildings. Much of the funding for this disaster assistance came from the Central American and Caribbean Emergency Disaster Recovery Fund (CACEDRF) established by the Emergency Supplemental Appropriations Act of 1999.

⁷ *USAID, Hurricane Mitch & Georges: From Relief to Recovery. Executive Summary, US Agency For International Development (USAID), 31 Dec 1999*

Military operations in the region were largely reimbursed through CACEDRF funding, which was U.S. funded.

Although disaster relief and crisis response operations are often high profile and attract international attention, military engineers have the ability to engage in nation-building in less publicized circumstances. Forward-deployed units, such as Seabees stationed in the Pacific island nations, have the opportunity to develop the local infrastructure. The primary difficulty with projects in this region is the ability to attract funding from the various governmental and NGO/PVO sources.

The recent experience of military engineers involved in infrastructure repair and enhancement indicates that their efforts are very effective in “peacetime” engagements in developing countries. However, any region where the enhancement takes place should be sufficiently pacified to reduce the possibility that the new or repaired infrastructure will not be damaged by hostile action or used for purposes of inhibiting further engagement. These broad parameters serve to limit the scope of engagement in infrastructure enhancement.

Defining Engagement

Military engineers can provide a wide variety of functions, such as infrastructure enhancement to help shape the Combatant Commander’s AOR. Military Engineers can serve as a viable adjunct to conventional diplomacy in the nation-building programs fostered by the United States. The utility of employing military engineers in the construction and improvement of infrastructure has multiple benefits to the military and

target nation.⁸ First, military construction provides valuable training across the spectrum of engineering. Second, AOR activities, while benefiting the indigenous population, build a measure of goodwill toward the United States. Third, the offer of such infrastructure enhancement services can act as a diplomatic incentive that bolsters the position of the United States relative to the nation receiving the services.

While this diplomatic incentive may seem to push infrastructure development more toward the Department of State (DOS), the benefits are more than just diplomatic. For example during the Summer of 2000, Military Engineers deployed to Trinidad and Tobago to construct a Coast Guard Command and Control facility with support from the Trinidad and Tobago Engineer Battalion. While deployed, the Military Engineers also constructed a Community Center. For all involved, this was a win-win situation. The State Department got a boost by showing support to Trinidad and Tobago, the U.S. and Trinidad Coast Guards got important infrastructure to support regional contingencies (Counter-drug interdiction), the citizens of Trinidad and Tobago got a facility to conduct community development, and the U.S. Military Engineers improved and developed valuable inter-operability skills training with foreign Military Engineers. Thus engineer units can serve as one of the Combatant Commander's tools in shaping the environment militarily as well as diplomatically to reduce potential threats.

The United States is pursuing a forward-looking National Security Strategy recognizing that globalization is increasing the degree of interconnection among the

⁸ Prior to Hurricane Mitch, the U.S. had little or no diplomatic relationship with the government of Nicaragua. Because of the severe devastation cause by Hurricane Mitch and the rapid mobilization, employability, and capabilities of U.S. Military Engineer the U.S was able to support disaster relief in Nicaragua. Military Engineers constructed many bridges and roads to allow relief supplies to flow. This disaster relief support and Military Engineer engagement opened the door to better diplomatic relationships and a more open dialogue between the U.S. and Nicaragua.

nations of the world. With increased interconnectivity, seemingly distant events can swiftly and significantly impact American security. In this new environment, security necessarily takes on a broader definition from: fostering co-operation among nations to deterring aggression and terrorism, to resolving conflicts, to preventing the spread of dangerous weapons, to promoting democracy and human rights, to opening markets and creating financial stability, to raising living standards, and protecting the environment. “International cooperation will be vital for building security in the next century because many of the challenges we face cannot be addressed by a single nation.”⁹ The three main aspects of the strategy are to bolster American security, to increase American prosperity, and to promote democracy and human rights abroad. Due to globalization¹⁰, the three aspects are interlinked, with each serving to strengthen the overall national security strategy objectives. In short, developing infrastructure with Military Engineers promotes U.S. security interest more than it directly defeats foes.

To maintain our nation’s security and position of leadership, the National Command Authority intends to remain actively engaged in shaping the global environment. The NCA’s strategy of engagement involves the use of all appropriate instruments of national power to influence other states and non-state actors. Infrastructure enhancement to support economic development and environmental protection is one of the available means to influence other states. Diplomacy, military forces and other foreign policy tools

⁹ A National Security Strategy for a New Century. *iii*

¹⁰ Globalization is a process in which geographic distance becomes a factor of diminishing importance in the establishment and maintenance of cross-border economic, political and socio-cultural relations. This process is thought to reach such intensity that relations change fundamentally, and people become aware of that change. The potential internationalization of relations and dependencies create opportunities, but also causes fear, resistance, actions and reactions. Primary Globalisation, Secondary Globalisation, and the Sustainable Development Paradigm – Opposing Forces in the 21st Century. *R.F.M. Lubbers, J.G. Koorevaar. Globus, Berlin, OECD Forum for the Future, 6 Jun 99. Received online 7 Feb 2001: <http://cwis.kub.nl/globus/Lubpdfs/Governan/Gover114.pdf>*

must be closely coordinated and even integrated to some degree to implement this strategy and effectively shape the international environment. As a result, there is an increasing degree of overlap between Department of State (DOS) and military responsibilities in implementing the national security strategy.

The DOS focuses on preventive diplomacy when dealing with crises. DOS's objective is to limit the escalation of these crises. In what has been termed a nation-building program, the DOS is concerned with preventing the internal failure of nations, recognizing that the collapse of a political infrastructure has a high cost in human suffering as well as the potential to affect international security interests.¹¹ One of the principal aspects of the nation-building program is assisting relief and other international assistance organizations to develop and sustain the physical infrastructure in allied and friendly nations. The nation-building program is based on the premise that infrastructure enhancements improve quality of life, standards of living and prosperity, increase extant political legitimacy and thereby reduce the potential for conflict. DOS initiatives include coordination of U.S. Agency for International Development¹² (USAID) programs and non-governmental organization (NGO)¹³ programs. Even though USAID generates controversy their mission is:

¹¹ The Marshall Plan was by far the most successful nation-building program developed. As George C. Marshall stated, "Its purpose should be the revival of a working economy in the world so as to permit the emergence of political and social conditions in which free institutions can exist." The success gave credence to future foreign policy activities that provided aid to developing nations to ensure U.S. security interests. The Marshall Plan still serves as a model. Hundreds of successful development programs around the world demonstrate how aid helps economic growth...promotes trade...and preserves peace. Most recently we have seen...the peaceful transition to multiracial democracy in South Africa...land reform in El Salvador...and a prosperous economy in Costa Rica...all examples of foreign assistance that work. *USAID*. Transcript of "Seeing The Victory Through: Fiftieth Anniversary Of The Marshall Plan". (USAID), 27 Nov 2000. Retrieved online 7 Feb 2001: <http://www.usaid.gov/multimedia/video/marshall/trans.html>

¹² USAID is an independent agency that receives general direction and overall foreign policy guidance of the Secretary of State. USAID administers U.S. economic and humanitarian assistance programs designed to promote sustainable development in other countries.

¹³ NGOs are also referred to as Private Voluntary Organizations.

USAID also enlists the collaboration of the American for-profit private sector, non-governmental and private organizations, and universities in its programs. Foreign assistance programs, funded by a mere fraction of the 1% of the total federal budget that goes to all foreign affairs programs, have ultimately put more dollars into the pockets of American taxpayers than they have ever taken out, because money spent on foreign assistance programs is usually spent in the U.S. -- in the form of purchases of food to be sent overseas, in spending on equipment and services sent overseas. Nearly 80% of U.S. Agency for International Development contracts and grants goes to U.S. firms for such purchases.¹⁴

Military initiatives to implement the National Security Strategy are articulated in Joint Vision 2020, which states that the military will be routinely deployed to “shape the international security environment”.¹⁵ One of the cornerstone objectives of Joint Vision 2020 is to develop a military that is persuasive in peace.¹⁶ By implication, such persuasion can extend beyond the obvious ability to project military force, and can consist of ancillary functions such as the creation and maintenance of physical infrastructures. The purpose of Joint Vision 2020 is to describe in broad terms the human talent and the operational capability necessary for American military forces to succeed across a full range of military operations. The vision allows for a wide vector of exercises and experimentation by Combatant Commands that should result in the evolution of forces to meet the strategic challenges of the future.

The general thrust of the strategic initiative in Joint Vision 2020 encompasses the use of Joint Military Engineers (JME) in infrastructure enhancement projects integrated into

¹⁴ U.S. State Department. State Department: What We Do. U.S. State Department. Retrieved online 7 Feb 2001: <http://www.state.gov/r/pa/index.cfm?docid=436>

¹⁵ *Chairman, Joint Chiefs of Staff. Joint Vision 2020. Washington: U. S. Government Printing Office, June 2000.*

¹⁶ Developing a military that is persuasive in peace as determined by Joint Vision 2020 is controversial. Many contend that it degrades the military’s ability to fight and win wars, however from a strictly military engineer standpoint that is not an entirely true statement. Military Engineers are tasked with providing and supporting force protection and sustainability. Force protection and sustainability is accomplished through construction and general engineering. So, while peacetime activities may detract from the military’s combat capability it doesn’t degrade a military engineer’s technical skill level.

the overall nation-building program fostered by the DOS. The use of military engineers in such projects can be viewed as an extension of the Combatant Commander's strategy with the long-term objective of reducing the need for direct military intervention through increasing the overall prosperity and well being of the people living in the AOR.

Illustrative of the new expanded military mission is the role played by the U.S. Southern Command in counter-drug operations. U.S. Military Engineers during 1998 deployed to St. Lucia and constructed a pier and operations center for the St. Lucia Coast Guard. These facilities were for future use by the U.S. Military or Coast Guard as exercise support, but the enduring legacy was that it provided needed infrastructure that would also allow St. Lucian and American forces to conduct interdiction operations. These infrastructure enhancements were completed in less than 90 days and during the same exercise engineers totally refurbished a local medical clinic. The results of this work were greater cooperation by the St. Lucians in counter-drug interdiction and improved support to the indigenous population.¹⁷ The successful use of engineering units for infrastructure enhancement will have the outcome of shaping the Combatant Commander's AOR to some degree by altering the nature of potential threats within the AOR.

NGOs and the military traditionally have viewed their roles as separate and distinctly different. NGO's traditionally have felt that a close association with the military jeopardized their neutrality, legitimacy, and subsequently their protection.¹⁸ However, in

¹⁷ Support to the local population came in several forms such as better health care facilities, economic support (about \$50,000 in materials was bought locally or the fresh food bought for rations), and local construction workers received training. These are just a few of the many cases where military construction has a positive residual effect on the locals.

¹⁸ Aall, Pamela. Miltenberger, Daniel LT.COL. and Weiss, Thomas G. Guide to IGOs, NGOs, and the Military in Peace and Relief Operations. U.S. Institute of Peace Press, Washington, D.C. 2000

recent years, because of an increased number of peacetime operations and the exposure to the advantages the military brings (i.e. logistical capacity) this negative attitude has begun to change. Besides changing attitudes of NGOs, the military too is trying to improve its coordination with NGOs through the institutional innovation of civil-military operations centers (CMOCs).¹⁹ Illustrating the improved coordination efforts, a CMOC was created in East Timor to coordinate the many NGOs and relief organizations, and with military forces. These CMOCs allow all the organizations to meet and discuss common objectives as well as exchange on information such as security issues. In addition, this integration, suggested by the strategic initiatives within Joint Vision 2020, indicates that JME infrastructure enhancement projects should be complementary to similar projects undertaken and coordinated by the DOS (which can include USAID and NGO assistance programs, and other means of increasing the overall prosperity within the AOR.) Thus, the Combatant Commanders should view the JME as a viable means to maintain active engagement in shaping the environment of the world, and promoting the spread of democracy, human rights, and respect for the rule of law.

U.S. Ambassadors have a major part in approving the infrastructure project within their AOR. Therefore, there must be cooperation and coordination between the CINC and the Ambassador to leverage all available assets for an integrated political and military approach to infrastructure development. This interrelationship between military, DOS, and other organizations drives the need for a coordinating body that can cross service, agency and civilian lines to promote democracy and regional stability through infrastructure enhancement.

¹⁹ Guide to IGOs, NGOs, and the Military in Peace and Relief Operations. 116

Chapter 3.

ENGINEER CAPABILITIES AND COMPARISONS

Programs operated by the DOS and USAID, NGOs, and private voluntary organizations (PVOs), and military engineers can meet varying aspects of the National Security Strategy's goals. They can do this by alleviating problems of state collapse and civil war through enhancing the prosperity and the physical infrastructure of allied and friendly nations. Because of the historical development of these capabilities, no one organization appears fully suited to deal with the complete range of tasks necessary for adequate infrastructure development. As a result, it is becoming increasingly necessary for extant organizations to work together to provide infrastructure enhancements.

The DOS pursues a policy of nation-building in accordance with political and diplomatic goals as implied by the U.S. State Department Strategic Plan (2000), shaped by assumptions derived from democratic peace theory, and historical relevance of the

Marshall Plan.²⁰ However, foreign policy is not static and reflects the shifting position of the incumbent administration. The DOS approach toward nation- building tends to look at the broad aspects of national infrastructures. These aspects include less tangible aspects of infrastructure development such as democratic institutions, human rights policies and extension of educational resources. Often, infrastructure enhancement takes the form of humanitarian aid, economic incentives, and refugee assistance. Congress politicizes the process to some degree because it controls the DOS budget for foreign aid.²¹

USAID is an independent federal government agency that operates as the principle source of U.S. assistance to countries recovering from disaster, attempting to escape poverty and engaging in democratic reforms. USAID receives overall policy guidance from the DOS and works to establish economic growth and agricultural development, and to improve the health, environment, and democratic institutions in target nations. Since 1993 USAID has reduced its staff size by nearly 37 percent to a current level of 2100 personnel with approximately 680 of those being overseas in 81 field offices. USAID

²⁰ “Under the direction of the President and the Secretary of State, the United States conducts relations with foreign governments, international organizations, and others to pursue US national interests and promote American values. Some of the goals of US foreign policy are to: secure peace; foster economic growth, **promote sustainable development**; combat international terrorism, crime, and narcotics trafficking; support the establishment/ consolidation of democracies; provide **humanitarian assistance** to victims of crisis and disaster; protect human health and several others. Protecting national interests and advancing US goals involves virtually every agency of the US Government and requires a set of strategic assets such as programs in **sustainable development**, military cooperation, peacekeeping, law enforcement, finance, international information, academic and cultural exchange, and other fields to provide the means necessary to address problems and achieve objectives; and diplomatic readiness consisting of the human resources, **infrastructure** and operations, and information resources management necessary for a strong US international presence.” *DOS*. U.S. Department of State Strategic Plan (2000). Washington. 25 oct 2000. Retrieved online 8 Feb 2000: http://www.state.gov/www/global/general_foreign_policy/2000_dos_stratplan_pta.html#iaso

²¹ *Nowells, Larry*. RL30511: Appropriations for FY2001: Foreign Operations, Export Financing and Related Programs. *Congressional Research Service*, 28 Nov 2000. Retrieved online 27 Dec 2000: <http://www.cnire.org/nle/inter-59.html>

has requested an operating budget of \$7.2 billion for fiscal year 2001.²² Congress separately funds USAID, and only a small percentage of its budget is directly used for infrastructure enhancement projects. USAID maintains close partnerships with PVOs, indigenous organizations and other national and international governmental agencies in order to implement its goals.

From a physical infrastructure perspective, USAID has established policies that emphasize shelter, domestic water and sanitation, and health care delivery as the types of construction projects that it will sponsor. USAID does not directly undertake infrastructure enhancement projects, but rather meets its objectives by funding projects that depend on consultants, contractors and local resources that will construct the facilities USAID deems appropriate. For example, USAID's policy regarding shelter is to foster and support indigenous construction activities, on the assumption that this has a "multiplier effect" on official inputs.²³ USAID does not fund infrastructure projects that require continued financial support from outside sources and requires these projects become economically self-sustaining once they are completed. An extensive sewage system in Egypt funded by USAID and largely constructed and maintained by local resources provides an example of the type of infrastructure construction projects the agency sponsors. The overall responsibility for the construction of these projects, however, remains with an American consulting firm that acts as the general contractor and supervisory entity. Historically, USAID contracting of local services has not gone

²² *Office of the Inspector General, USAID. Five Year Plan For Fiscal Years 2001-2005.* USAID. Washington. Retrieved online 8 Feb 2000: <http://www.usaid.gov/oig/public/plans/5yrplan.pdf>

²³ *USAID. Shelter. USAID Policy Papers, Feb 1985.* Retrieved online 18 Nov 2000: <http://www.usaid.gov/pubs/ads/pps/shelter/shinintroduction.html>

well because of graft and corruption, resulting in a lack of confidence and weak public opinion both domestic and internationally for its programs.²⁴

USAID's policy is to maintain partnerships with PVOs and NGOs to meet its objectives. USAID funds PVO projects in target nations with the objective of expanding the PVO's overseas development efforts without compromising their private and independent nature.²⁵ By means of their links with private institutions in developing nations, PVOs can be a means for effectively engaging the rural and urban poor as well as a means of extending the impact of USAID's resources through the linking of government and private funding.

PVO's, however, are not exclusively concerned with the enhancement of physical infrastructure, although building and construction concerns often lie within the purview of their programs. In implementing infrastructure development projects, PVO's generally rely on indigenous resources with training and assistance provided by an American organizational and supervisory staff. Virtually every PVO project in target nations requires some degree of construction activity. Some of the structures and improvements are project specific with limited general usefulness, but many are broad enough in scope to remain in use after the completion of the project.

Support provided during Hurricane Mitch is a good example. Mitch was one of the strongest and most damaging storms to ever hit the Caribbean and Central America. At its peak on October 26 and 27, sustained winds of 180 mph and heavy rains covered

²⁴ "Adverse publicity due to corruption has been a pervasive issue throughout USAID's history that has not helped to further the public's confidence in the U.S. foreign aid program. During USAID's early history, a major USAID emphasis involved financing capital development and infrastructure projects." *Office of the Inspector General, USAID. Five Year Plan For Fiscal Years 2001-2005.* USAID. Washington. Retrieved online 8 Feb 2000: <http://www.usaid.gov/oig/public/plans/5yrplan.pdf>

²⁵ *A.I.D. Partnership in International Development with Private and Voluntary Organizations. USAID Policy Papers, Nov 1984.*

Central America. USAID estimated that more than 92 bridges were destroyed and 75 more were damaged by the storm. The storm crippled the region's infrastructure and isolated entire communities, impaired emergency aid workers, and hampered efforts to supply the larger cities with food, water, and other essentials. The Honduran road network and coastal ports were devastated. By the end of the emergency response phase, 24 December 1998, USAID provided \$2.1 million U.S. dollars for Honduras emergency response to the Cooperative for Assistance and Relief Everywhere (CARE) - NGO.²⁶ Although CARE is not an active participant in reconstruction of infrastructure, it is a major player in providing “food, tools, and other relief assistance to people recovering from natural disasters.”²⁷ Without infrastructure enhancement, or in this case, reconstruction of vital transportation routes, relief supplies could not have reached the individuals that needed help.

Both USAID and NGO/PVO infrastructure development efforts rely on outside technical expertise and necessary material and equipment to be used in addition to local resources. The reliance on local resources creates both a funding and logistics limitation in infrastructure construction because of the lack of local expertise and in many cases the lack of quality construction materials. A prime example of the deficiency in local labor and quality material can be found in the construction of a small Haitian Coast Guard facility that was built in 2000. The contract was offered for local builders and local construction materials with neither qualifying for contract award within Haiti. As a result, the labor and materials were shipped from Trinidad and the construction cost was

²⁶ U.S. Agency for International Development, Bureau for Humanitarian Response (BHR), Office of U.S. Foreign Disaster Assistance (OFDA). Central America – Hurricane Mitch Factsheet # 22, 24 Dec 1998. Retrieved online 8 Feb 2001: http://www.usaid.gov/hum_response/ofda/mich22fs.html

²⁷ Guide to IGOs, NGOs, and the Military in Peace and Relief Operations. 127

over \$800 thousand dollars for a building that should have cost about \$250 thousand. In addition, ongoing supply issues in some underdeveloped areas may be difficult due to an inadequate transportation infrastructure. A secondary consideration regarding the use of NGOs/PVOs in infrastructure construction is the lack of effective oversight by a supervisory body that occurs in a significant number of projects.²⁸ USAID partners with NGOs/PVOs only in a small percentage of the total number of projects undertaken by such organizations. Despite the advantages and strengths that DOS and NGO/PVO programs have, the U.S. Military can supplement them.

American military forces stationed abroad provide additional capabilities to enhance the physical infrastructure of host nations and are less subject to the limitations of USAID and NGO/PVO infrastructure construction projects. In many instances, engineering units are stationed at or near prospective construction sites with a full complement of equipment and an established logistics system that also depends on local transportation infrastructure. Take for example, Soto Cano Air Base where the U.S. has stationed Joint Task Force Bravo (JTF-B) in Honduras. JTF-B maintains equipment, personnel, and materials to support training exercises and infrastructure enhancement within Central America. This allowed for rapid response to Hurricane Mitch and continues to provide U.S. Military Engineers with an advantage in supporting logistics operations for the CINC's infrastructure enhancement programs. Another advantage military engineers have is that, U.S. Military budgetary considerations include training (Engineer) exercises that can be directed toward MOOTW in foreign nations based on the premise that the skill set for civilian construction projects overlaps with that required for military

²⁸ *Maren, Michael.* The Road to Hell: The Ravaging Effects of Foreign Aid and International Charity. *New York: The Free Press, Dec 1996.*

operations. The military engineer is required to train their personnel to meet certain wartime missions, which include deploying and construction.

The use of military engineers for infrastructure enhancement in developing nations comports with the expanding role of the regional Commanders-in-Chiefs (CINCs) and Combatant Commanders.²⁹ American military commanders are becoming increasingly involved in diplomatic and foreign policy areas through the increased emphasis on peacekeeping and nation-building.³⁰ The use of military personnel, including engineers, as a means of pursuing MOOTW is an increasingly significant aspect of the CINC's overall policy. The growing significance of CINC influence is exemplified by the use of military personnel in infrastructure construction projects in Kosovo, Bosnia, Haiti, and other regions around the world. The varied use of engineering units demonstrates the growing need to develop and execute joint military operations in the areas of peacekeeping and humanitarian assistance.³¹

Each branch of the military has an engineering component with various capabilities stemming from the nature of their primary mission. Although there is some degree of specialization in most units, the general skills required for military engineers are transferable to a civilian context. In addition, military engineering units deploy with a

²⁹ "To effectively shape the international environment and respond...our diplomacy, military force, other foreign policy tools, and domestic preparedness efforts must be closely coordinated." A National Security Strategy for a New Century. 4 "The complexity of future operations also requires that, in addition to operating jointly, our forces have the capability to participate effectively as one element of a unified national effort. This integrated approach brings to bear **all the tools of statecraft** to achieve our national objectives unilaterally when necessary, while making optimum use of the skills and resources provided by multi-national military forces, regional and international organizations, non-governmental organizations, and private voluntary organizations when possible." Joint Vision 2020. 12

³⁰ Priest, Dana. A Four-Star Foreign Policy?; U.S. Commanders Wield Rising Clout, Autonomy. *The Washington Post*, 28 Sep 2000.

³¹ Gerber, Roger A. Joint Engineer Support to the Warfighting CINCs. *Carlisle PA: Army War College*, April 10, 2000.

complement of equipment and material necessary for their primary mission, placing their resources within the Combatant Commander's AOR.

USACE is the largest engineering organization in the U.S. military, employing civilian and military personnel.³² Congress has enlarged the mandate of USACE, making it responsible for a wide variety of domestic civil works projects including road building, domestic waterway construction and maintenance, housing and other physical infrastructure construction. Although it remains an integral part of the U.S. Army with a primary military mission, it simultaneously operates as an agency of the executive branch of the federal government, and as such, reflects the policies of the administration. As a result, USACE has the expertise and capability to undertake any type of infrastructure enhancement project. In addition, it is fully capable of mobilizing resources rapidly to any global location.

The Army Corps of Engineers has had a wide variety of experience with foreign infrastructure construction projects during the past fifty years. A most recent example, is the USACE involvement with projects funded by USAID for the reconstruction/rebuilding of local commercial buildings that were destroyed or damaged as a result of the 1998 terrorist bombings in Nairobi, Kenya. In the past decade, USACE has initiated an outsourcing policy for a broad spectrum of basic support functions, thereby freeing USACE personnel for more direct infrastructure enhancement projects. USACE remains fully capable of undertaking any conceivable construction project regardless of location, and its Engineer Battalion Combat Heavy units are well suited for larger infrastructure enhancement projects.

³² The United States Army Corps of Engineers (USACE) is made up of approximately 34,600 civilian and 650 military men and women.

The Navy maintains Naval Mobil Construction Battalions (NMCB or better known as Seabees) composed of various general construction and specialized units. Their complement includes Civil Engineer Corps officers, other staff officers, enlisted craftsmen from every construction trade and various fleet support occupational specialties. These units provide construction services to support shore activities and deployable fleet hospitals. In addition, Underwater Construction Teams have unique underwater construction and demolition capabilities. Naval construction units are generally deployed to forward logistic support bases such as Guam; Okinawa, Japan; Puerto Rico; Rota, Spain; Sigonella, Italy. In the past, naval construction units have been used for civilian disaster relief and infrastructure enhancement in the independent Pacific island nations close to their forward deployment locations. In 1992, when the Truk Island in the Federated States of Micronesia was devastated by a typhoon, a task-organized element from the Seabees deployed to Truk for disaster relief. Another support organization that the Navy possesses is Naval Facilities Engineering Command (NAVFAC). NAVFAC has a similar mission and structure to that of USACE. NAVFAC's ten engineering field divisions and engineering field activities, located across the United States and Europe, provide engineering support and services to the naval shore establishment with a total civilian and military workforce of 16,000.

Air Force Civil Engineer units stress rapid deployment capabilities of personnel and equipment through its Base Engineer Emergency Force (Prime BEEF) and its Rapid Engineer Deployable Heavy Operational Repair Squadron, Engineer (RED HORSE) programs. The capabilities of these units include a full spectrum of construction and infrastructure enhancement skills and equipment, with an emphasis on housing and base

facility construction and environmental protection. Both Air Force Civil Engineer units and Seabees have been actively involved with air base construction for friendly and allied nations in the past and have the ability to extend their mission into MOOTW.

There are engineering units located throughout the Marine Corps. Units are organized into battalions attached to Marine Divisions and Forces Service Support Groups and each Marine Wing Support Squadron possesses some limited engineer assets. Marine Corps engineering units have the capabilities to plan engineer operations and provide supervision for engineering units. They conduct engineer reconnaissance³³, plan and establish supply installations, provide field maintenance for equipment, establish water supply points requiring the use of purification and distillation, as well as a number of other types of engineering field operations.³⁴ Although the Marine Corps engineering units are relatively small in number³⁵ when compared to other engineering units employed by the American military, they nonetheless span the full spectrum of skills and capabilities required for physical infrastructure enhancement in MOOTW.

³³ All military engineers have the ability to conduct engineer reconnaissance at varying degrees whether it is related to mobility or just civil engineering. In a non-conflict environment, engineer reconnaissance serves both the host nation and the U.S. military. Without engineer reconnaissance the needs of the host nation cannot be determined. Perhaps engineer assessment is a much better term than engineer reconnaissance.

³⁴ *USMC Doctrine Division. FMFRP 12-50, Engineers. Marine Corps Historical Publication. 26 September 1991*

³⁵ There are three Combat Engineer Battalions (2 Active and 1 Reserve) with about 650 personnel. Combat Engineer Battalion's are very light in equipment and are gear toward support combat not general engineering tasks. There are four Engineer Support Battalions (3 Active and 1 Reserve) with about 1100 personnel. Engineer Support Battalions are much heavier and have significant general engineer capabilities. Each Marine Corps Wing has a four Marine Wing Support Squadron each with an engineer section. These engineer sections have about 50-100 engineers and their mission is more toward general engineering in support of the Marine Corps Air.

Military engineering staffs are gradually implementing the organizational changes necessary to undertake Joint Task Force (JTF) engineering operations.³⁶ This integration of capabilities is the outcome of both doctrinal and experiential considerations, which indicate that future operations will take place in regions with underdeveloped or damaged military and civilian infrastructures. The challenges of this organizational integration require that military engineers develop the capacity to operate with other services and with NGOs/PVOs as well as the ability to contract for services from both American and indigenous sources.³⁷ The JTF approach to engineering gives the CINC a greater degree of flexibility in the use of engineering components to respond to both military and non-military contingencies by means of integrating the various engineering resources in the AOR. Thus, the JTF and the JME can serve to enhance the CINC's range of choices when faced with the need to shape the environment to reduce the spectrum of potential threats. At the same time, JME units can receive training in essential skills, thereby meeting training requirements that insure effectiveness in their primary mission. In essence, the more information that the CINC has about the strengths and weakness of the engineering units within the command structure, the greater the possibility that the commander can tailor a package suited to meet the needs of identifiable and achievable MOOTW infrastructure enhancement missions. Also, a major advantage that cannot be overlooked, for the CINC in supporting infrastructure development within his AOR is the fact the military has its own engineers and DOS or NGOs must contract them. The

³⁶ The need for joint engineering operations has recently been addressed with the issuance of JP 3-34, Engineer Doctrine for Joint Operations, 5 July 2000. Also the need for joint civil engineer support has also been directed with the issuance of JP 4-04, Joint Doctrine for Civil Engineering Support, 26 September 1995.

³⁷ Langley, Michael D., Lt. Col. Joint Task Force Headquarters Staff Engineer Operations. *No date*. Retrieved online 18 Nov 2000: <http://www.wood.army.mil/ENGRMAG/PB5954/PB5953/jtfh.htm>

contracting of engineers will undoubtedly cause construction costs to increase. For example, U.S. Military engineers have deployed to Haiti from 1994 to the present and constructed hundreds of schools. The average cost of the schools was \$25,000, for the same square footage facility it cost \$500,000 to contract through USAID.

Because MOOTW operations are increasingly joint, multi-agency and multi-national in nature, the issue of engineering unit command and control has become more significant. At the joint and multi-national staffing level, experience indicates that it is most advantageous to place engineering units intended for MOOTW operations under the operational (J3) staff. In addition, a separate engineer headquarters should be identified to command and control MOOTW support.³⁸

Table 1 provides a summary of capabilities and differences between military engineering assets and other agencies. The information provided in the table below comes from several sources. The majority of the bullet items relate to budget items or core competency tasks that are directed to each military service. Funds for construction abroad used by the services are part of military construction (MILCON). These MILCON funds are divided into several different types such as major MILCON and unspecified minor MILCON. Unspecified minor MILCON funds provide the preponderance of infrastructure enhancement funds that are used by the military for support of the CINC's Theater Engagement Strategy as it relates to foreign support. One definite drawback to using military engineers is that the force structure has been reduced at a time when the need is much greater.

Table 1. CINC Engineer Resources Comparison

TYPE	FUNDS		PERSONNEL		CAPABILITY		EFFECTIVENESS	
USAID	DOS = .05% of U.S. Budget ▪ 3.3% of DOS Budget ▪ Infrastructure Enhancement not specific	-	▪ Contracted ▪ Local Hire	*	▪ Vertical Construction ▪ Horizontal Construction ▪ Not Responsive ▪ Lacks Force Protection (FP)	-	▪ Very capable over the long term ▪ Under funded	*
NGOs	Private Sector ▪ Too dependent on generosity	-	▪ Contracted ▪ Local Hire ▪ Volunteer	+	▪ Vertical ▪ Horizontal ▪ Not Responsive ▪ Lacks FP	-	▪ Capable over the long term ▪ Under funded ▪ Unpredictable	-
USA	DOD = 2.6% of GDP ▪ 24% of DOD Budget ▪ MILCON = .013% of USA Budget ▪ Minor MILCON = .017% of MILCON	-	▪ Active Duty ▪ Relies heavily on Reserves & ARNG ▪ USACE	*	▪ Vertical ▪ Horizontal ▪ Responsive ▪ Limited Civil Engineer Support ▪ Average Proficiency ▪ FP Provided	+	▪ Capable short term ▪ Deployable ▪ Limited funding ▪ Large foot-print	*
USN	DOD = 2.6% of GDP ▪ 32% of DOD Budget ▪ MILCON = .008% of USN Budget	-	▪ Fully integrated Active & Reserve coordination ▪ NAVFAC	*	▪ Vertical ▪ Horizontal ▪ Extremely Responsive ▪ Unlimited Civil Engineer Support ▪ Extreme Proficiency ▪ FP Provided	+	▪ Capable short term ▪ Rapid Deployable ▪ Limited funding ▪ Nominal foot-print ▪ Forward Deployed	+
USAF	DOD = 2.6% of GDP ▪ 29% of DOD Budget ▪ MILCON = .004% of USAF Budget Minor MILCON = .027% of MILCON	-	▪ Active Duty ▪ Relies on Reserves & AFNG	*	▪ Vertical ▪ Horizontal ▪ Extremely Responsive ▪ Organic Civil Engineer Support ▪ Extreme Proficiency ▪ Nominal FP Provided	+	▪ Capable short term ▪ Rapid Deployable ▪ Limited funding ▪ Big foot-print	+
USMC	DOD = 2.6% of GDP ▪ .029% of USN Budget MILCON falls under USN Budget	-	▪ Active Duty ▪ Relies heavily on Reserves ▪ Limited Force Structure	-	▪ Limited Vertical ▪ Some Horizontal ▪ Extremely Responsive ▪ No Civil Engineer Support ▪ Lacking Proficiency ▪ FP Provided	*	▪ Capable short term ▪ Rapid Deployable ▪ Lacks funding ▪ Smallest foot-print	*
LEGEND * = Average + = Excellent - = Inferior								

Each service (Military, USAID & NGOs) has engineering assets and capabilities to meet specific operational needs and the capabilities of each are rarely a perfect match to meet the CINC's or even the Ambassador's requirements. This is why the CINC and the

³⁸ Joint Force operations that are extremely engineer intensive, requiring numerous engineer assets to accomplish their missions are a good example of when engineer headquarters need to be identified for command and control (C2). The C2 structure for Operation Fuerte Apoyo (Hurricane Mitch) is a prime example. 22nd Naval Construction Regiment Headquarters (Reserve) was activated to provide C2 for the many engineer assets under Joint Task Force Bravo. JP3-34, II-4

Ambassador must analyze mission requirements to determine optimal asset tailoring to accomplish their objectives.³⁹

³⁹ *Chairman, Joint Chiefs of Staff. Joint Publication 3-34. Engineer Doctrine for Joint Operations. Washington: U. S. Government Printing Office, 5 July 2000.*

Chapter 4.

DETERMINING AND DEFINING INFRASTRUCTURE ENHANCEMENTS

In the context of MOOTW, the concept of infrastructure encompasses the totality of fixed and permanent facilities necessary for the civilian population to prosper. As such, the view of infrastructure is more expansive than the traditional military one of sufficient facilities to maintain operational capability within a theater or AOR.⁴⁰ A clear understanding of the nature and requirements of civilian infrastructure is essential for the development of a reconnaissance plan to determine the nature and scope of proposed infrastructure enhancement projects.

The approach toward infrastructure enhancement employed by USAID and NGOs/PVOs does not appear to be based on a coherent triage process that directs resources to the point where they will achieve the maximum benefit. In large measure, these programs are reactive rather than proactive in that they respond to requests for infrastructure enhancement initiated by interested parties either within the United States or the host nation. Additionally, a subjective means of determining infrastructure repair or enhancement priorities raises issues of the equitable distribution of resources among indigenous populations that are not adequately addressed by current policies and

⁴⁰ *Blumenson, Martin.* The Emergence of Infrastructure as a Decisive Strategic Concept. *Parameters: US Army War College Quarterly*, Vol. XXIX, No. 4, Winter 1999-2000.

doctrines.⁴¹ In contrast, military engineering reconnaissance coupled with intelligence procedures provide opportunities to assess thoroughly the infrastructure needs in an AOR and establish a meaningful hierarchy of priorities for enhancement.⁴² Thus, a Joint Military Engineers (JME) approach promises to provide a higher degree of objectivity to the construction aspects of the nation-building process.

The Army Civil Affairs Organizations attached to the various Special Operations Commands (SOCs) generally provide a reference for infrastructure reconnaissance. The purpose of this unit is to operate as the CINC's link to the civil authorities in the AOR. Their mission is to assist the host government in meeting the needs of the indigenous people and to help maintain a viable and stable administration. The unit operates as a link between Joint Staff intelligence and Joint Staff planning and the civilian authorities and planners.⁴³ Although the unit is concerned with a wide variety of civil affairs issues, a general assessment of infrastructure status is included in their mission statement.

Traditional engineering reconnaissance efforts can be used to determine the extent of infrastructure damage or underdevelopment in an AOR. The focus of such reconnaissance need only shift somewhat from the military concern that facilities provide operational capability, to a concern that facilities provide civilian societal capabilities. To be sure, some degree of overlap between the two is likely to occur particularly in the area of transportation and utilities infrastructure. In the case of regions such as Kosovo that have sustained extensive damage due to military action, engineering reconnaissance

⁴¹ Berke, Philip R. & Timothy Beatley. *After The Hurricane: Linking Recovery To Sustainable Development In The Caribbean*. Baltimore: The Johns Hopkins University Press, Feb 1998.

⁴² Engineer reconnaissance or assessment is beneficial to both the military and the host nations. It provides a road map of needs and requirements to enhance the host nations infrastructure as well as providing support to the military in the event of a future operation.

⁴³ Holmes, H. Allen. *Civil Affairs: Reflections of the Future*. American Forces Information Service Defense Viewpoint, Vol. 12, No. 32, 6 Jun 1997.

can determine which facilities are still functional, which are partially functional and which are beyond repair. In underdeveloped areas that have not been damaged by warfare, such as Haiti, reconnaissance can assess the level of the existing civilian infrastructure and determine the projects needed to bring the infrastructure to an objectively set minimal level deemed appropriate for the region and circumstances. As a result, this reconnaissance process can provide a training exercise similar to that undertaken in exclusively military operations.

In any reconnaissance of civilian objectives, it is likely that the resources available to military engineering units will be insufficient to create a complete infrastructure enhancement in an AOR. As a result, reconnaissance should be coupled with analytical methods to determine the most advantageous methods for expenditure of available resources. In general, this should follow the process of assessment of the mission, the enemy, the terrain, the troops and the time available in a METT-T analysis.⁴⁴ The outcome of such an analysis can then influence the CINC's decision in determining the likelihood of mission success for a range of potential projects.

Integral to the analysis of appropriate infrastructure enhancement projects is the process of Intelligence Preparation of the Battlefield (IPB). Engineering units generally focus on the mission and the terrain aspects of Mission, Enemy, Terrain, Troops, and Time (METT-T) analysis, which in the case of infrastructure enhancement is appropriate in non-hostile AORs. In the case of recently pacified AORs, such as Kosovo, or other areas prone to terrorist activity, such as the Middle East, the threat potential from hostile

⁴⁴ Glenister, Cynthia A., Capt. And Major John E. Richardson. The Engineer Intelligence Process. Periodical; Engineer: The Professional Bulletin for Army Engineers, PB 5-97-1, Ft. Leonard Wood, MO, Mar 1997.

forces should be deemed viable, and a full IPB process should be employed in the reconnaissance assessment of infrastructure enhancement. The IPB process requires defining the battlefield environment, describing the battlefield effects, evaluating the threat, and determining the threat's potential course of action. The objective of the analysis is to identify objectives that are viable and feasible when viewed in the totality of the local circumstances.

In this aspect of reconnaissance, the military engineering operations to enhance infrastructure can differ significantly from the methodology employed by governmental and NGO/PVO project selection processes.⁴⁵ Because USAID and NGO/PVO projects require the commitment of civilian personnel and the cooperation of indigenous resources, such projects can be limited if there remains even a low level threat from potentially hostile elements. As a result, the existence of insurgency, ethnic or religious tension, or a terrorist element within a target nation can negatively influence the development and implementation of an infrastructure enhancement project that relies exclusively on civilian field personnel. In contrast, it is part of the mission of military engineers to operate under low-level threat circumstances, and the units possess the training and capabilities of doing so.

The IPB requires a thorough intelligence situation overlay. An overlay includes such pertinent data as available construction materials, barriers, transportation infrastructure issues, and host nation assets. The intelligence assessment should include the status of the existing infrastructure in the area of operations, an evaluation of the existing topographic

⁴⁵ Regardless of type of engineers used a reconnaissance or an assessment must be made first to determine needs or requirements of infrastructure. Military has inherent capabilities to conduct reconnaissance and USAID or NGO/PVOs must contract for these services making these contract services more inclined to force protection issues.

product, and a determination of the need for specialized engineer requirements. This information is in addition to the traditional data required for any construction project. The analysis also requires a specific assessment of potential threats to the operation.

In any reconnaissance involving infrastructure enhancement, the parameters of the mission should be clearly defined in order to limit the probability that the operation will expand through mission creep.⁴⁶ The plan will be challenged by unity of effort, which is more difficult to achieve in MOOTW than in war since other government agencies may be involved or have a leadership position. As a result, the environment may be multi-national or interagency with multiple chains of command. The reconnaissance effort should assess such subjective factors such as the possibility of mission creep due to the involvement of other governmental entities, allied and host-nation military units, and civilian contractors in the project. The intelligence assessment should outline a plan of coordination and liaison in pursuit of common interests toward mission accomplishment. From this understanding, the reconnaissance should include a clear statement of mission objectives and mission-success parameters.

A secondary but important reconnaissance and intelligence consideration is the cultural appropriateness of the planned infrastructure enhancement project. Military engineering units approach construction issues such as design and functional utility from a uniquely American perspective that may not coincide with the existing view of the local population. In essence, it does little good to build a structure that the intended user does not understand or is unwilling to employ. Reconnaissance should determine if the technological level of the host nation is sufficient to maintain the proposed infrastructure

⁴⁶ *Headquarters, Department of the Army. Operations Other than War. FM5-100-15 Corps Engineer Operations. Headquarters, Department of Army, 6 Jun 1995.*

after completion and the sources of ongoing funding if it is required for the operation of the enhancement. For example, the U.S government built a Haitian Coast Guard Operations Center during fiscal year 2000 at a cost of \$800,000. During the design phase of this project the U.S. Embassy wanted to put a heating, ventilation and air conditioning system (HVAC) into this facility. However, this HVAC system would have raised the price to over \$1 million and it would have raised the Haitian annual maintenance cost by 35-50%. This would have been the only Haitian Coast Guard Operations Center with an HVAC, so it was determined by USSOUTHCOM that the HVAC was an unnecessary expense for the project and for future Haitian facilities maintenance. For projects such as housing, it is also necessary to determine if the proposed design and location are compatible with the customs and expectations of the indigenous population of the host country. Liaison with civil affairs units can help remedy cultural limitations or misunderstandings.

Based on the information gathered during the reconnaissance and intelligence process, the engineering unit should be able to establish a hierarchy of priorities for the most effective means of expending available resources for infrastructure enhancements. This information can then be presented to the CINC in the AOR in a format that can be clearly understood by non-engineering staff. Ultimately, the CINC in coordination with the regional Ambassadors will make the decision as to the appropriate infrastructure enhancement projects based on a wider understanding of the political and strategic elements as well as the intra-and-inter governmental issues that affect operations within the AOR. Under COCOM command authority doctrine, the CINC can assign those units

deemed most suitable to achieve the mission objectives as defined by the reconnaissance and intelligence process.⁴⁷

⁴⁷ However, if a CINC does not have COCOM over forces in his AOR, the CINC must then request support from JCS. An example of this is SOUTHCOM.

Chapter 5.

CONCLUSIONS/RECOMMENDATIONS

RETURN ON INVESTMENT

The potential return on investment from engaging military engineers in the construction of infrastructure in host nations is not easily quantifiable. As with other foreign aid rationales, the benefit derived from the enhancement of indigenous infrastructures in developing or war-damaged nations often lies in the subjective and often intangible secondary considerations beyond the immediate utility of the enhancements. Benefits from using the military in infrastructure enhancement can include the general increase of prosperity in the host nation and its ability to provide health and educational delivery services, which can indirectly benefit the economic and political position of the United States through international trade and diplomatic cooperation. Use of the military in infrastructure enhancement can establish a level of good will toward the United States and its military, increasing the legitimacy of forward presence, civil control of military, and democratic society. Use of the military in infrastructure enhancement can serve as a training function for military units operating under realistic field conditions. Use of the military in infrastructure development can also enhance the recipient nation's infrastructure thereby supporting other military operations in the event of an armed conflict or crisis at a later date. The National Security Strategy

as well as Joint Vision 2020 recognize both explicitly and implicitly the potential benefit from infrastructure enhancement operations.

The direct economic benefit to indigenous populations of infrastructure enhancement comes from the general economic and cultural advantages provided by improved transportation networks, modernized health care and educational delivery systems, and improved sanitation and housing. The general prosperity of a region translates into stable markets for American goods in an increasingly global economy. In addition, increased prosperity in a nation reduces the possibility of internal strife in the area that can spill out of one nation to affect the markets and production in an entire region.

The economic view of infrastructure enhancement adopts a long-term perspective, recognizing that structural improvements provide benefits that extend far into the future. Buildings, roads, and water-resource improvements are durable and tangible contributions to the local economy that contribute to prosperity for an indefinite period of time. In addition, infrastructure enhancement tends to produce a “multiplier effect,” stimulating additional projects based solely on indigenous initiatives and resources. The underlying objective of infrastructure enhancement is to assist the indigenous population to become self-sufficient and integrated into the world economy.

A less tangible return on investment is the good will that is generated toward the United States as the result of infrastructure enhancement projects. The recent experience of the American military in Haiti reflects the lengthy duration of the good-will generated in the past. Although the American military occupation of Haiti had terminated sixty years before, the local population remembered the infrastructure enhancements and economic initiatives created by the military. From a cost perspective, this good-will has

the long-term effect of reducing the likelihood of conflict arising between indigenous and American interests, thereby lowering the potential that funds will have to be expended to resolve such conflicts.

An additional benefit to military engineer engagement in infrastructure enhancement projects is the training that it provides for both U.S. and host nation forces. In many cases similar training is conducted domestically by means of construction projects that enhance the infrastructure. Shifting this training function toward underdeveloped regions of the world can serve the dual mission of increasing the skill level of military personnel while meeting the objectives of the national security strategy. An often forgotten training aspect and joint requirement is power projection or deployment, which engineer engagement outside the U.S. can provide and domestically it does not.

We must also consider that the uniformed services under congressional, DOD, and JCS mandate are responsible for training, equipping, and organizing their forces. This training is basic core level. “The requirement that CINCs create various contingency and other plans leads ... to the creation of joint mission-essential task lists (JMETL) by CINC staffs and subordinate joint commands.”⁴⁸ Therefore this joint training requirement can only be met outside of the normal service training and in almost all cases it requires a particular Joint Engineer Task Force to deploy.

Host nations, IGOs, NGOs/PVOs, and other groups focused on international development generally view engineer engagement as a non-threatening activity that often complements their national and organizational objectives. Engineer engagement not only increases the legitimacy of forward deployments, but also allows American military

⁴⁸ Tritten, Dr. James T. *Joint Mission-Essential Tasks, Joint Vision 2010, Core Competencies and Global Engagement*. Aerospace Power Chronicles. Fall 97.

personnel wider access within the host nation and among the entities fostering development. From a military perspective, the engineering presence in infrastructure enhancement provides a significant reconnaissance opportunity that in many cases would not be available were it not for the humanitarian objective of the mission. At the same time, the engineering unit can develop relationships with host nation governments, military forces, and contractors which may be of inestimable value in the event of subsequent military operations.

Military engineers are a key component for executing the National Security Strategy's imperative of engagement through their capability to shape the environment within an AOR, to respond to a full spectrum of potential threats, crises and disasters, and to prepare for an uncertain future. The engineering commitment to the engagement strategy should be viewed in terms of both its short-term effects for creating legitimacy for the presence of U.S. military forces and immediate civilian relief capabilities, and in terms of its long-term effects of promoting security through the development of economic prosperity. As a result, military engineering's commitment to MOOTW is likely to increase in the foreseeable future, with infrastructure enhancement viewed as a viable and necessary function of engineering units.

Although Army, Air Force, Navy and Marine Corps engineers have individually provided complementary infrastructure enhancement support in many operations since World War II, the peace keeping and humanitarian assistance operations of the past decade have demonstrated a greater need to execute joint engineer operations in order to maximize the effective application of available resources. The resultant integration of planning and execution resources from JME endeavors will maximize the benefit derived

from infrastructure enhancement projects while providing significant opportunities for joint force training under field conditions. In addition, there is considerable indication that more effective command and control doctrines have to be developed in order to effectively liaise with intra-governmental and multi-national efforts.

Military engineer participation in nation-building programs through infrastructure enhancement is fully in keeping with the overall policy objectives of the United States. Military engineers can support a host nation's efforts to promote development, ideally through the use of host-nation resources. The objective is to promote long-term stability and an infrastructure that supports prosperity and economic progress, thereby reducing the potential threat within an AOR.

When military engineers undertake an infrastructure enhancement project, they are producing a tangible economic benefit both for the host nation and the American military itself. Unlike forward deployed armored or infantry units that are essentially engaged in policing activities, engineers can produce an economic benefit for the host nation while training in a broad spectrum of activities. This places the engineer in a unique position within the military, enabling them to operate as a tool to assist the CINC in shaping the environment within the AOR.

There remains a degree of debate within both the civilian and military communities as to the appropriateness of using military units for humanitarian purposes, including the enhancement of infrastructure in developing or war-damaged nations. To a large degree, the opponents of such MOOTW missions may not fully understand the changing nature of warfare that is occurring at the onset of the 21st Century. While there will be a continuing need for traditional military operations in the future, the concept of

engagement as a means to prevent warfare will become an increasingly important aspect of the overall military mission. As a result, MOOTW missions are likely to expand, requiring the development of more definitive doctrine for using military engineers to enhance infrastructure. The bottom line is that infrastructure enhancement is not charity and serves U.S. interests.

RECOMMENDATIONS

Finally as identified in Table 1, no engineers are perfectly suited for the task of engagement regardless of what type (military, USAID, NGO/PVOs) they are. Engagement is the right policy for this changing world environment, but joint military engineers are not the single answer to the question. What is the right mix of all these resources to execute engagement?

Infrastructure enhancement should be specifically included within the operation mission statement. However, the end state must also be very clearly identified, as it was during Hurricane Mitch disaster relief or the military engineers will get in an endless mission creep.

Military engineers should not only be exercised jointly, but as part of an Interagency Engineer Organization. Or at least an engineer specific cell with the Civil Military Operations Center. Establishing these CMOCs should not just be a recommendation during MOOTW but doctrine. The only draw back is that NGOs and PVOs are still not guided by military doctrine, however if the NGOs and PVOs want to use military logistical support then they will agree to the formation of CMOCs. If however, a CMOC is not established then an engineer cell must at a minimum be included within the U.S. Embassy staff.

DOD should also utilize the recent success of the CMOC with respect to NGOs and PVOs by establishing a permanent engineer liaison office to coordinate between DOD and these varying agencies. By establishing this permanent engineer liaison office the interrelationship between military, DOS, and other organizations will promote democracy and regional stability through infrastructure enhancement and also provide more legitimacy to the U.S. engagement strategy.

While cooperation and planning for infrastructure between the military, government, and civilian organizations is better than the past, there is no definitive authority as to how these different organizations plan, resource, and conduct infrastructure enhancement. National Command Authority should direct DOS and DOD to establish an Engineer Project Review Board that would encompass each geographical CINC. The focus of this board should support the National Command Authority's engagement policy and resource the appropriate military, government, or civilian engineers organization to accomplish these tasks.

Another problem that must be remedied is the alignment of the CINC's AORs with the DOS's regional breakdown of the international community. Until this alignment is done there can be no truly coordinated engagement strategy between DOS and DOD.

Since engagement seems to be the appropriate answer, we must leverage all assets to execute this strategy and therefore we must coordinate between all engineer assets and create a Joint Interagency Engineer organization and a permanent engineer liaison office that can leverage all available resources.

GLOSSARY

AOR	Area of Responsibility
CINC	Commander in Chief
CMOC	Civil-Military Operations Center
DOD	Department of Defense
DOS	Department of State
IGO	Intergovernmental Organization
IPB	Intelligence Preparation of the Battlefield
JCS	Joint Chiefs of Staff
MILCON	Military Construction
MOOTW	Military Operation Other Than War
NAVFAC	Naval Facilities Engineering Command
NGO	Non-governmental Organization
PVO	Private Voluntary Organization
USAID	United States Agency for International Development
USACE	United States Army Corps of Engineers

Military Construction. Military construction projects over \$1 million that supports the military services. Each construction project must be listed as a line item in the military service's submitted budget.

Unspecified Minor Military Construction. Military construction projects authorized by Title 10 U.S. Code 2805 with an estimated funding cost of less than \$1 million. These construction projects do not have to be listed as line items in the military service's submitted budget.

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